

# FACT SHEET

## Geospatial Measurement of Air Pollution Field Screening | AltEn Facility | September 2021

### Introduction

In response to a request from the Nebraska Department of Environment and Energy (NDEE), the U.S. Environmental Protection Agency (EPA) Region 7 and Region 5 will be conducting a screening-level air monitoring survey near the closed AltEn ethanol facility near Mead, Nebraska. EPA will operate its Geospatial Measurement of Air Pollution (GMAP) air monitoring vehicle on public streets following a path near and around the AltEn facility during the week of September 13, 2021 (weather permitting). EPA will provide the screening data and mapping results to NDEE.

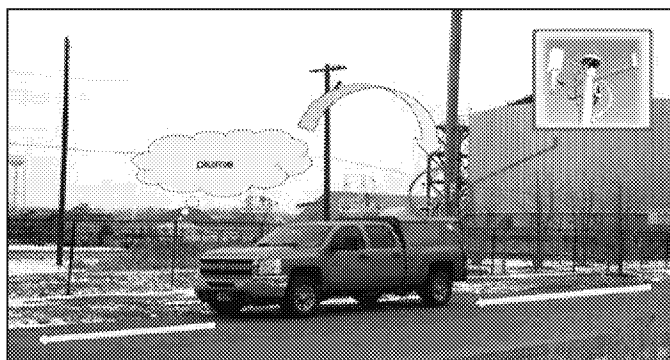
NDEE is the lead regulatory agency over the AltEn facility and has already conducted monitoring, including water, air, waste material and soil sampling. The state has authorized several seed companies, which had supplied the facility with treated seeds, to develop a Remedial Action Plan under the NDEE Voluntary Cleanup Program.

Data collected from EPA's GMAP unit during this assessment is intended to be used for air pollution screening purposes. The unit has capabilities for mobile and stationary emissions measurements including source attribution.

### Mobile Air Monitoring Overview

The GMAP unit is a mobile remote sensing unit, basically a truck, equipped with several air pollutant analyzers and technology that utilizes fast-response instruments and a global positioning system (GPS) to map air pollution patterns around sources. The GMAP is designed to provide an initial screening of air pollution, which could point to the need for further monitoring with other instruments. The air monitoring screening data can help identify air borne substances. Not all substances present at a given facility are detectable with air monitoring equipment. Sample results can

range from non-detections to concentrations that are above or below levels of concern.



*GMAP Vehicle in mobile measurement mode*

This system uses a mobile platform to measure seven specific chemicals in the atmosphere including: hydrogen sulfide ( $\text{H}_2\text{S}$ ), methane ( $\text{CH}_4$ ), benzene ( $\text{C}_6\text{H}_6$ ), toluene ( $\text{C}_7\text{H}_8$ ), ethylbenzene ( $\text{C}_8\text{H}_{10}$ ), m-o-p xylene (BTEX or  $\text{C}_8\text{H}_{10}$ ), and ozone ( $\text{O}_3$ ), along with meteorological parameters (wind speed, wind direction).

The mobile platform can be used to obtain highly sensitive ambient measurements to quantify air pollution concentrations, identify sources, and evaluate geospatial impact of these seven specific chemicals.

This monitoring vehicle allows EPA to capture a picture of monitored pollutants in the air and to better locate a potential source. Using a mobile system gives EPA the capability to rapidly screen a large area where potential sources may be located. The screening data is also helpful in identifying the need for additional monitoring.

### Monitoring Facts

The GMAP's combination of equipment allows for real-time screening and mapping of pollutants while the vehicle is in motion or taking stationary measurements at facilities.

**The GMAP has two operating modes:**

- **Mapping** (collection of data while driving continuously or mobile)
- **Quantification** (collection of data in a stationary position within a plume)

**The unit's capabilities also include:**

- Employ next generation mobile and stationary monitoring methods to assess fence line and near-source concentrations of hydrogen sulfide, methane, benzene, toluene, ethylbenzene, m-o-p xylene, and ozone;
- Identify fugitive emission sources and community exposures combined with geospatial mapping;
- Measure geographically dispersed sources and isolate processes within a facility;
- Quantify emissions;
- Potentially calculate emissions flux to quantify short-term emission rates – Other Test Method (OTM)-33 and OTM-33a.

**GMAP requirements:**

- Dry weather (no measurable precipitation),
- Minimum wind speed of 1 meter/second,
- Perimeter access to potential sources.

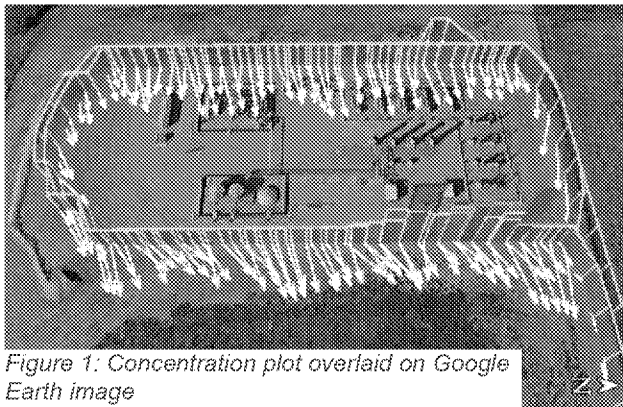
**Mapping**

Figure 1: Concentration plot overlaid on Google Earth image

Figure 1 is an example of GMAP results from mobile monitoring. The results in this image show the wind direction and speed that are used to identify the location of the emission source. Using green to red to

represent low to high levels, the map also depicts the relative concentration of the emissions at the location identified through GPS technology.

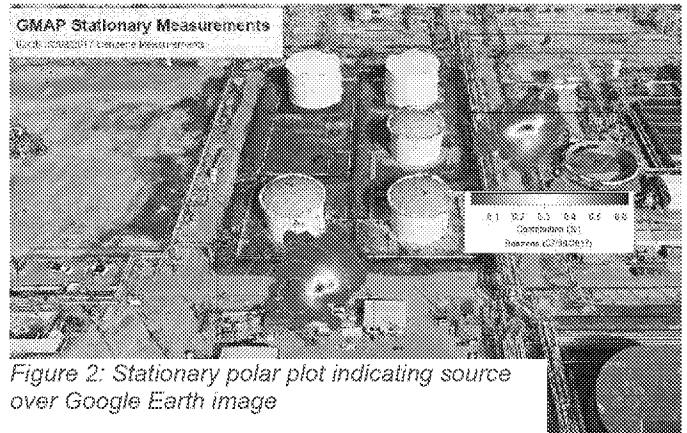
**Quantification – Polar Plots**

Figure 2: Stationary polar plot indicating source over Google Earth image

EPA can use the GMAP data collected from stationary monitoring to generate polar plots, like those in Figure 2, to identify plumes of facility emissions. EPA can analyze the polar plots to isolate and attribute pollutant emissions to specific facilities.

**Polar plots use visual imagery to illustrate:**

- The direction of emissions to the source and,
- The amount (or relative concentration) of emissions from the source.

**Additional Information**

See link to fact sheet online at:

<https://www.epa.gov/ne/nebraska-cleanups>.

For information about NDEE's activities at this site, visit:

<http://dee.ne.gov/Press.nsf/pages/AltEn>

For an overview of NDEE's Voluntary Cleanup program, visit: <http://dee.ne.gov/NDEQProg.nsf/OnWeb/VCP>

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